

Change Over Time

The Lowering of Lake Washington

Lesson Plan

The ways in which human communities value the Earth's geography determines how it is used or modified. Sometimes we change our geography, but only temporarily as powerful natural forces return them to their original form. For example, floods from rivers destroy or remove homes, mudslides cover roads and highways, and hurricanes like Katrina break down man-made levees. Other times, humans can effectively modify the environment or geography to make life better for a community or region. This lesson will show how the engineering feat of lowering Lake Washington impacted the **residents and geography of the Central Puget Sound region**. **Pacing: 4-5 days**

Lesson-at-a-Glance

Teacher Preparation: Read three articles - [Cedar River Watershed \(King County\) – Environmental Overview](#), [Lake Washington Ship Canal](#), and [Black River Disappears](#).

Day 1: Introduction

1. Assess Prior Knowledge. Recall/review the Five Themes of Geography. This can be done as a discussion or using the first few slides of the [What is Geography and How Does it Change?](#)
2. Show slideshow [What is Geography and How Does it Change?](#) which show natural changes in geography caused by floods, hurricanes, earthquakes, erosion and man-made changes such as bridge structures, deforestation, jetties, and regrades. (10 minutes)
3. Show film ([Lake Washington Then and Now](#)) about Lake Washington's physical features, the history of its use, the construction of the Chittenden Locks and the Montlake Cut in 1916 -1917, along with overall changes in the shoreline. (30 minutes)

Day 2: Review and Document Analysis

1. Review slide show by having students recall and discuss two positive and two negative impacts of lowering Lake Washington (5 – 10 min.)
2. Map analysis: Place students in family groups (three per group) and distribute the USGS map showing the contour lines of shoreline. In each small group have students analyze the change in water level and brainstorm what they believe the impact of lowering the lake had on people in various locations along the shoreline. A pdf version of the map can be shown on a screen or printed at 11"x17." See Resources below. (15 min.)
3. **Small group analysis using images and documents:** For the remainder of period. Follow directions on document analysis questions worksheets. Each family group will have a different set of directions.

Day 3-4: Document Analysis and Presentation

1. Continue document analysis and completion of worksheet. (15 – 20 min.)
2. Group Presentations: Each group presents their findings while other groups take notes. A tally is kept of the reports of whether the lowering of the lake was helpful or hurtful.

Day 5: Assessment

Objectives:

Students will learn...

Content Objectives:

- Physical features of the Lake Washington basin before and after the lowering of the lake
- How engineers lowered Lake Washington
- The social and economic impact on several Puget Sound residents and businesses

Performance Objectives (habits of mind):

Students will...

- Interpret and analyze images and data
- Draw conclusions from images and data
- Respond to change over time and impact prompts
- Take Notes
- Evaluate impact of human interaction with the environment

ELL Objectives: (Reading EALR 2 Component 2.3)

Beginning: Students will use a word or gesture to describe a cause and effect of the lowering of Lake Washington.

Intermediate: Students will use simple sentence starters with text based evidence to describe causes and effects of the lowering of Lake Washington.

Advanced: Students will use descriptive sentences with text based evidence to describe causes and effects of the lowering of Lake Washington.

Assessment:

How will I know they know?

Students will be able to answer the question: How did the lowering of Lake Washington impact the livelihood of local residents dependent upon the natural geography of the Lake Washington basin?

Formative:

- Document analysis resulting in students providing two positive and negative effects of lowering of Lake Washington.
- Group presentations

Summative:

Evaluating the impact of the lowering of Lake Washington can be done in several ways. Here are three suggestions:

- Mock Jury Trial (Structured Academic Controversy)
- Children's Story
- Change Over Time Wall Map

Resources:

Background Articles for Teachers:

HistoryLink.org article: [Cedar River Watershed Environmental Overview](#)

HistoryLink.org article: [Lake Washington Ship Canal](#)

HistoryLink.org article: [Black River Disappears in July 1916](#)

PowerPoint slide show: [What is Geography and How Does it Change?](#)

Video: [Lake Washington Then and Now](#)

[USGS map of Lake Washington and surrounding land](#)

[Smaller Version of USGS map for printing](#)

[Document Analysis Questions](#) - print set for classroom use

[SOAPS document analysis template](#) - print 30 for classroom use

[Image analysis worksheet](#) - print 17 for classroom use

[TP CASTT worksheet](#) for Curtis documents - print 1

Primary source documents for these 13 family identities:

[Anderson](#)

[Hewitt](#)

[Burrows](#)

[Hill](#)

[Crooker](#)

[Moses](#)

[Curtis](#)

[Pritchard](#)

[Eitel](#)

[Schupp](#)

[Farrar](#)

[Siegel](#)

[Forbes](#)

Extended Resources:

Key Terms (people, places, events & concepts):

Levee	Locks	Excavation	Regrade	Civil engineer	Livelihood
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Instructional Activities:

Context: The focus of this lesson is the theme of human-environment interaction using local geography which may be familiar to most students – the Lake Washington Basin.

There are three key concepts to human/environmental interaction:

Humans adapt to the environment

Humans modify the environment

Humans depend on the environment

Day 1

Bell Ringer: Show **slideshow How Does Geography Change 1 (hyperlink)?** with the intent of recalling the five themes of geography and examining man’s impact on the environment. End the show with a discussion using the question on the final slide: What are some reasons why people want to change the natural geography. (15 minutes)

Show [Lake Washington Then and Now](#) (20–30 min)

Exit Card: Have students answer this question from the slide show: What are three uses or activities of Lake Washington?

Day 2

- 1. Review and initial document analysis:** Review slide show by having students recall and discuss two positive and two negative impacts of lowering Lake Washington. (10 minutes)
- 2. USGS Map Analysis:** Place students in family groups (three per family) and distribute the USGS map (print on 11" x 17" paper) showing the contour lines of land/water. Project one of the map images on the SMARTBoard to show students the two different contour lines. Place students in family groups and ask them to speculate the impact of the lowering of the lake on people in various locations along the shoreline. Teachers can preselect a few places on the shoreline for students to analyze (per each family/identity group) or have students select up to five places each. Have them consider families and businesses as they try to imagine the impact on families.
- 3.** Using one of the family documents sets - Burrows or Farrar - model for students how they will analyze documents and draw a conclusion using evidence about whether lowering Lake Washington had a positive or negative impact on this person and/or family. Allow students to work the remainder of period analyzing documents using both the **Image Analysis Worksheet** or the **Document Analysis Questions**.

Days 3-4:

1. Continue document analysis and completion of worksheet. Direct students to come to a conclusion based on the evidence:
 1. Did the lowering of Lake Washington help or hurt this person and his/her family or associates?
2. Students should collaboratively complete a 'findings' sheet and prepare to present to the rest of the class. A reading strategy you might consider using is reciprocal teaching. (see directions)
3. **Group Presentations:** Each group presents their findings while other groups take notes. A tally is kept of the reports.
4. **Discussion :** What do these results tell us about man's impact on the environment? What changes to geography are happening today? (building a new 520 bridge, etc.)

Day 5 Assessment:

There are a variety of assessment options; for middle school two are suggested: [Mock Jury Trial](#) (Structured Academic Controversy) or Town Hall Meeting. Use the [Town Meeting](#) materials for facilitating a Town Hall Meeting.

- **Prompt:** How did the lowering of Lake Washington impact the social and economic livelihood of local residents dependent upon the natural geography of the Lake Washington Basin?